**DEPARTMENT OF TRANSPORTATION**
DIVISION OF ENGINEERING SERVICES
Office of Structural Materials
Quality Assurance and Source Inspection

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Contract #: 04-0120F4
Cty: SF/ALA Rte: 80 PM: 13.2/13.9
File #: 69.28

# WELDING INSPECTION REPORT

**Resident Engineer:** Pursell, Gary
**Address:** 333 Burma Road
**City:** Oakland, CA 94607

**Report No:** WIR-002806
**Date Inspected:** 22-May-2008

**Project Name:** SAS Superstructure
**Prime Contractor:** American Bridge/Fluor Enterprises, a JV
**Contractor:** Zhenhua Port Machinery Company, Ltd (ZPMC), Changxing Island

**OSM Arrival Time:** 630
**OSM Departure Time:** 1530
**Location:** Shanghai, China

**CWI Name:** Zhang Bao Lei and Ye Yong Jun

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|---|---|---|---|---|---|---|---|
| **Inspected CWI report:** | ☐ Yes | ☑ No | ☐ N/A | **CWI Present:** | ☑ Yes | ☐ No | |
| **Electrode to specification:** | ☑ Yes | ☐ No | ☐ N/A | **Rod Oven in Use:** | ☑ Yes | ☐ No | ☐ N/A |
| **Qualified Welders:** | ☑ Yes | ☐ No | ☐ N/A | **Weld Procedures Followed:** | ☑ Yes | ☐ No | ☐ N/A |
| **Approved Drawings:** | ☑ Yes | ☐ No | ☐ N/A | **Verified Joint Fit-up:** | ☑ Yes | ☐ No | ☐ N/A |
| | | | | **Approved WPS:** | ☑ Yes | ☐ No | ☐ N/A |
| | | | | **Delayed / Cancelled:** | ☐ Yes | ☑ No | ☐ N/A |

**Bridge No:** 34-0006
**Component:** OBG and SAS Tower Fabrication

**Summary of Items Observed:**

On this date, Caltrans Office of Structural Material (OSM) Quality Assurance (QA) Inspector Joselito Lizardo was present as requested to perform observations on the fabrication of Orthotropic Box Girder (OBG) and SAS Tower at Zhenhua Port Machinery Company (ZPMC) facility at Changxing Island, in Shanghai, China.
The QA Inspector has randomly observed the following activities on these Bays mentioned below;

77 and 114M Tower Mock-ups, Plate Cutting, Rolling
This QA Inspector observed 114M Tower Mock-up was having 5 workers working outside the mock-up loosening bolts and nuts on one side of tower splice connector plate. This Inspector tried to talk to one of the ZPMC worker and said that they are trying to remove those bolts and nuts installed on this mock-up. Cutting machine has no Caltrans job on the table at the moment. On separate location, this QA observed rolling of 2 - 60mm thick plates with marking P229 and P468 were on going to correct flatness which seems intended for vertical tower stiffener. On horizontal milling machine, two 65mm thick plates with mark P322B and P327A were seen in the machine table. These two plates are being beveled with this milling machine and appear to be part of vertical tower stiffener also.

Bay 3-OBG side/bottom panel:
The QA Inspector randomly observed ZPMC welder operator ID Number 051246 utilizing the Flux Cored arc Welding (FCAW) Process in the 2F (Horizontal Fillet) Position with gantry mounted welding apparatus and ZPMC Weld Procedure Specification (WPS) WPS-B-T-2132-3, to weld open-rib stiffener on Side Plate SP008-001-001. The QA Inspector randomly observed ZPMC CWI Zhang Bao Lei monitoring weld parameters. The QA Inspector also randomly monitored weld parameters and recorded them as follows: 295 amps, 29.3 volts

and 440mm per min travel speed. The weld parameters appeared to comply with contract requirements.
Manual FCAW fillet welding on diagonal open rib stiffener plate at the gantry table for Side Panel SP087-001-037 was also observed by this QA Inspector. This is being welded by ZPMC welder identified on ID number 062447.
Tack welding of WT stiffener plates for bottom panel BP113-001-005 and BP088-001-004 were noted likewise grinding/cleaning of tack welds on these bottom panels. Caltrans QA also observed drilling of 16-24mm diameter bolt holes on flange of one end of bottom plate BP059.

AS shown on two photos below, this QA Inspector randomly observed two incidents wherein butt spliced floor beam plates are supported with 4" X 4" lumber at one side and at the middle of the plate length making the plates buckle and lost its flatness. This incident has called the attention of ZPMC/QC and they addressed it by removing the lumber in question and laid the plates flat.

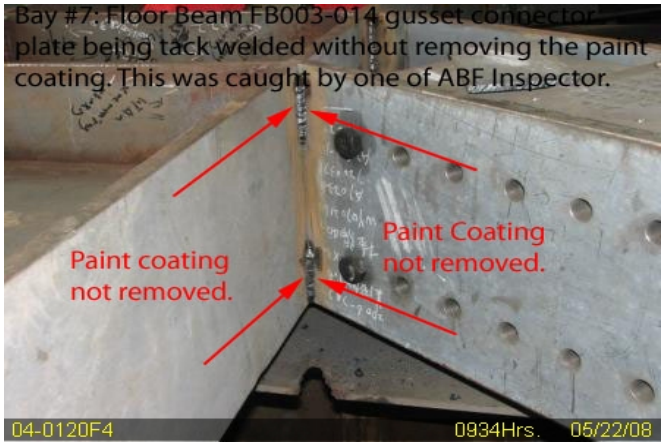
Bay 4 Tower Diaphragm
The QA Inspector randomly observed ZPMC welder Wu Zhibing ID Number 049804, utilizing the Submerged Arc Welding (SAW) Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-2221-B-U3c-S-1, to weld the fill and cover pass on butt splices of Tower Diaphragm Sub-Assemblies. The QA Inspector randomly observed ZPMC CWI Ye Yong Jun, monitoring weld parameters. The QA Inspector also randomly monitored weld parameters during welding of ESD1-SA78-1B (flipped upside down) and recorded them as follows: 570 amps, 31.5 volts with a travel speed of 425 mm per minute. Weld parameters appeared to comply with contract requirements.
Heat straightening of side plate SP096-001 weld numbers 008~042 (due to welding distortion) using oxy-acetylene gas and procedure HSR1(B)-937 was noted. Carbon arc air gouging, making groove on run off tab for welding continuation on diaphragm ring ESD1-SA287-XA and grinding/cleaning of groove joint after back gouging on splice plate NSD1-SA333 A/B-1A this QA Inspector also observed.

Bay 7-OBG - Floor Beam Sub Assembly:
The QA Inspector randomly observed ZPMC welder Cheng Chuang Zong ID Number 044824, Zhang Liang ID number 067036 and Liu Long Xian ID number 044786 utilizing the FCAW Process in the 2F (Horizontal Fillet) Position with ZPMC WPS WPS-B-T-2132-3, to weld gusset stiffeners to the web and flange, web to flange on Floor Beam Diaphragm Sub-Assembly FB014-011-007, FB014-011-028, FB014-008-024, FB003-032-026. The QA Inspector randomly observed ZPMC CWI Hu Wei Qing monitoring weld parameters. One welder's parameter noted was 294Amps, 29.3Volts and 433 travel speed. The weld parameters appeared to comply with contract requirements.

This QA Inspector observed ABF QA Inspector reprimanding welder Hu Yacheng ID number 049339 for not asking ZPMC grinding personnel to grind off the paint on weld surface prior tack welding on 25mm gusset connector plate to bottom flange of floor beam FB003-014 and FB003-009. After this incident, this welder ceases tack welding and looked for ZPMC grinding personnel to grind off the paint. See photo below.

Bay 8: Tower Diaphragms
The QA Inspector randomly observed ZPMC welder Ma Ying ID Number 045270, utilizing the SAW Process in the 1G (Flat Groove) Position with ZPMC WPS WPS-B-T-2221-B-U3c-S-, to weld the fill pass on butt splice of Tower Diaphragm WD1-A1-B-1A. The QA Inspector randomly observed ZPMC CWI Shashi, monitoring welding parameters.

The QA Inspector randomly observed ZPMC welder ID Number 058482, utilizing the FCAW Process in the 3G (Vertical Groove) Position with ZPMC WPS WPS-B-T-2232-B-U3-F, to weld groove splice butt joint on Tower Diaphragm ring Sub-Assembly ESD1-SA226 weld number 9A. The QA Inspector randomly observed ZPMC CWI Hu Wei Qing monitoring weld parameters. The weld parameters observed were 216Amps, 25.4Volts and 118 mm/min travel speed which appeared to comply with contract requirements. Tack welding also noted on run off tab on diaphragm ring SSD1-SA326 by welder ID number 066243 utilizing electrode TL-508.







**Summary of Conversations:**

At Bay 3, four gusset connector plates being tack welded to bottom flange of floor beams FB003-014 and FB003-009 paint coating on weld surface was not removed.

**Comments**

This report is for the purpose of determining conformance with the contract documents and is not for the purpose of making repair or fit for purpose recommendations. Should you require recommendations concerning repairs or remedial efforts please contact Mazen Wahbeh, (818) 292-0659, who represents the Office of Structural Materials for your project.

**Inspected By:** Lizardo,Joselito Quality Assurance Inspector

# WELDING INSPECTION REPORT

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**Reviewed By:** Cochran,Jim QA Reviewer